SHANNIKOV, Vladimir Mikhaylovich; MOSKALEV, Nikolay Dmitriyevich;
    KAN, Kliment Nikolayevich; BRAGINSKIY, V.A., red.

[Strength calculations for parts made of thermosetting
plastics with thread and meta reinforcement] Raschety na
prochnost' detalei iz termoreaktivnykh plastmass s rez'boi
i metallicheskoi armaturoi. Leningrad, 19 p. (Leningradskii
dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom.
Seriia: Primenenie plastmass, sinteticheskikh kauchukov i
kremniiorganicheskikh soedinenii v mashinostroenii i priboro-
stroenii, no.3)
                                                    (MIRA 17:7)

MIRZOYEV, Rustam Guseynovich, kand. tekhn. nauk; BRAGINSKIY, V.A.,
        red.

    [Design and construction of plastic parts] Iz opyta ras-
    cheta i konstruirovaniia detalei iz plastmass.  Leningrad,
    1964.  25 p.                                    (MIRA 17:11)

BRAGINSKIY, V.A., inzh.

Precision of instrument parts made of the AG-4 plastics.
Priborostroenie no.3:24-26 Mr '65.                    (MIRA 18:4)

BRAGINSKIY, V.A.

Standardization of plastics and plastic parts. Standartizatsiia
28 no.5:24-27 My '64.                                    (MIRA 17:12)

TIMOSHUK, Anton Samoylovich; TAGANOV, Nikolay Ivanovich;
    BRAGINSKIY, V.A., red.

    [Use of fluoroplast-4 shavings as material for packing
    glands] Primenenie struzhki ftoroplasta-4 v kachestve na-
    bivok sal'nikovykh uplotnenii.  Leningrad, 1965.  14 p.
                                            (MIRA 18:10)

LOSEV, Boris Ivanovich, doktor tekhn.nauk, prof.; STREL'TSOV, Konstantin
Nikolayevich; PECHENKIN, A.L., inzh., red.; BRAGINSKIY, V.A., inzh.,
red.; FREGER, D.P., izd.red.; BELOGUROVA, I.A., tekhn.red.

[Manufacture and assembly of parts made of plastics; a survey]
Obrabotka i sborka detalei iz plasticheskikh mass; obzor.  Pod
red. A.L.Pechenkina i V.A.Braginskogo.  Leningrad, 1960.  75 p.
(MIRA 14:6)

(Plastics)

18. V. B. BRAGINSKY: Radiation of electromagnetic wave...

Category : USSR/Radiophysics - Generation and Conversion of Radio-frequency    I-4
            Oscillations

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4447

electron cluster of finite dimensions passes at a constant velocity
through a grid, which has an ideal conductivity for the field and which
is transparent to the electrons. The total energy and its spectral
density are obtained. Both cases considered represent examples of
radiations resulting from "inhomogeneous" boundary conditions.
Bibliography, 11 titles.

Card    : 2/2

*BRAGINSKIY, V.B.*

BRAGINSKIY, V.B.; MINAKOVA, I.I.

Experimental investigation of the mutual synchronization of two klystron generators. Vest.Mosk.un. Ser.mat.,mekh.,astron.,fiz., khim. 11 no.1:157-164 '56.          (MIRA 10:12)

1. Kafedra teorii kolebaniy Moskovskogo universiteta.
            (Oscillators, Electron-tube)

*BRAGINSKIY, V.B.*

109.8.9/17

AUTHORS: Braginskiy, V.B., Gvozdover, S.D., Gorshkov, A.S., and Trofimenko, I.T.

TITLE: Mutual synchronization of reflex klystrons without producing amplitude and frequency discontinuities. (Vzaimnaya sinkhronizatsiya otrazhatel'nykh klistronov bez skachkov amplitudy i chastoty.)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol.II, Nr 8, pp.1048-1052 + 1 plate (USSR)

ABSTRACT: One of the shortcomings of reflex klystrons is their comparatively narrow tuning range. It has been found, however (Ref.1) that it is possible to operate these klystrons in parallel, thus widening their operating range. In the following it is proposed to carry out a more detailed investigation. The experimental system, shown in Fig.1, consists of two reflex klystrons having operating frequencies $f_1$ and $f_2$ and operating voltages $u_1$ and $u_2$ such that $f_2 - f_1 = \Delta f$ and $u_2 - u_1 = \Delta u$ where $\Delta f$ and $\Delta u$ are comparatively small quantities, the klystrons have a coupling coefficient $k$. For a given pair of klystrons, $\Delta f$, $\Delta u$ and $k$ are well defined quantities. The process of synchronization can be represented as shown

Card 1/3

Mutual Synchronization of Reflex Klystrons Without Producing
Amplitude and Frequency Discontinuities.

diagrammatically in Fig.2. Experimental investigation was
carried out on two klystrons operating on wave-lengths in
the vicinity of 10 cm and their resonators had quality
factors of the order of 200. It was found that outside
the permitted values of $\Delta u$, $\Delta f$ and $k$, the operation
of the klystrons is accompanied by the discontinuities of
amplitude and frequency, such as shown in Fig.3B, while
within the range of the permissible values their operation
proceeds smoothly (see Fig.3a). The results can be rep-
resented as shown in Fig.4, where the synchronous operat-
ion of klystrons is represented in the $\Delta u$ versus $\Delta f$
plane. It is seen that for very low coupling coefficients,
such as $Qk < 0.014$ where $Q$ is the quality factor of a
klystron, the synchronization is almost impossible. An
increase in $k$ leads to a continuous synchronisation but
only over a certain range of the values of $\Delta u$ and $\Delta f$.
For values of $Qk > 3$ the coupling becomes overcritical
and amplitude and frequency jumps occur. The output power
as a function of output frequency for a pair of klystrons
Card 2/3   is shown by two experimental graphs given in Fig.5. It is

109—8—9/17

Mutual Synchronization of Reflex Klystrons Without Producing Amplitude and Frequency Discontinuities.

seen that it is possible to obtain an almost constant output power over detuning ranges of about 40 Mc/s. There are 5 figures and 4 references, of which 2 are Slavic.

ASSOCIATION: Department of Physics of the Moscow State University imeni M.N.Lomonosov. (Fizicheskiy Fakul'tet Moskovskogo Gosudarstvennogo Universiteta im. M.V. Lomonosova)

SUBMITTED: November 29, 1956.

AVAILABLE:

Card 3/3

BRAGINSKIY, V. B.:  Master Phys-Math Sci (diss) -- "Investigation of the irra-

diation of electromagnetic waves in the interaction of electron bundles with

local heterogeneities".  Moscow, 1958.  7 pp (Moscow Order of Lenin and Order

of Labor Red Banner State U im M. V. Lomonosov, Physics Faculty), 150 copies

(KL, No 6, 1959, 123)

BRAGINSKIY, V.B.; MUSTEL', Ye.R.

Experimental investigation of the radiation by electron lumps in the
neighborhood of inhomogeneities. Izv.vys;ucheb.zav.; radiofiz. 1 no.3:
124-127 ' 58.                                              (MIRA 12:1)

1. Moskovskiy gosudarstvennyy universitet.
                    (Microwaves)

BRAGINSKIY, V.B.

SOV/109-3-3-22/23

SUBMITTED: December 7, 1957

AUTHORS: Golubkov, P.V. and Tsimring, Sh. Ye.

TITLE: The Second All-Union Conference on Radioelectronics of the Ministry of Higher Education of the USSR (Vtoraya vsesoyuznaya konferentsiya MVO SSSR po radioelektronike) - News Item

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3, Nr 3, pp 440 - 444 (USSR)

ABSTRACT: The conference took place during September 23 - 29, 1957, at Saratovskiy gosudarstvennyy universitet imeni N.G. Chernyshevskogo (Saratov State University imeni N.G. Chernyshevskiy). Apart from the representatives of the conference was attended by the representatives of the scientific research institutes of the Soviet and Ukrainian Academies of Science, various industrial establishments and the interested ministries. This arrangement stimulated the discussion and evaluation of the papers presented and permitted the determination of plans for the future research to be carried out by the universities in the field of radioelectronics.

During the Plenary session on September 23, two papers were read: "Development Trends of UHF Electronics in the Soviet Union" by N.D. Devyatkov and "Electromagnetic Waves in the System of Vari-directional Electron Beams" by V.M. Lopukhin. N.D. Devyatkov presented numerous factual data illustrating the rapid development of the U.H.F. electronics in the Soviet Union and the vast contribution of the Soviet scientists to the theoretical foundation of this science; he also discussed the development trends of U.H.F. electronics in the immediate future. The paper described a number of original Soviet U.H.F. devices. The work of V.M. Lopukhin was concerned with the theoretical investigation of the phenomena taking place in multi-ray devices whose electron beams have different directions. The author showed that the presence of the electron beams which are perpendicular to the axis x facilitates the appearance of the solutions which are increasing functions of x for the case of n rays directed along the axis x; it also leads to the

Card 1/16

appearance of exponentially increasing solutions in the presence of one beam in the above direction. The Electronics Section comprised 50 papers; more than one-third of these were concerned with the theoretical and experimental investigation of wide-band electronic devices for U.H.F. The lecture by V.M. Shevchik, L.Ya. Majofis and L.D.Pokrovskiy dealt with the extension of the known theories of travelling-wave tubes and backward-wave tubes to the practically important cases when the delay structure necessitated the taking into account of the discrete character of the interaction of the electron beam with the high-frequency field. The lecture by V.C. Stal'makhov, V.M. Shevchik and Yu. D. Zharkov was devoted to the simplified analysis of the operation of a backward-wave tube by employing the cosinusoidal approximation of the given field. The papers by V.B. Braginskiy, A.S. Gorshkov, A.I. Kostiyenko, G.F. Lyubimov, I.F. Trofimenko and A.V. Anishmov were concerned with the detailed experimental and theoretical investigation of the possibility (first indicated by V.M. Shevchik in 1954) of expanding the bandwidth of the electronic trimming of reflex klystrons by means of the

Card 2/16

mutual synchronisation of several klystron tubes. The operation of reflex klystron with multi-circuit resonant systems was also investigated. The results of experimental and theoretical investigation of two-ray amplifying and multiplying tubes were given in the communication by L.Z. Aitova, V.M. Lopukhin, L.A. Ehrudova and in the communication of V.I. Kanavets. Some of the papers in the Electronics Section dealt with the investigation which were concerned with the development of novel U.H.F. devices suitable for the generation and amplification of the wave-forms in the millimetre and sub-millimetre ranges. The papers of great interest were: "Experimental investigations of the Radiation of the Electron Bunches in the Vicinity of Non-homogeneities" by V.B. Braginskiy and Ye.P. Murzel', "Comparison of the Efficiency of Certain Methods of the Generation of Millimetre Waves" by A.B. Tager and "Application of the Higher Spatial Harmonics of the Electromagnetic Field in Slowing-down Systems" by A.B. Tager and V.A. Bolotsev.

Card 3/16

SOV-109-3-4-23/28

AUTHORS: Braginskiy, V. B. and Vorotnikov, L. P.

TITLE:     Separation of the Higher Harmonics in a Reflex Klystron by
           Means of Complex-Form Resonators (O vydelenii vysshikh
           garmonik otrazhatel'nogo klistrona pri pomoshchi rezonatorov
           slozhnoy formy)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3, Nr 4,
           pp 573-574 (USSR)

ABSTRACT:   One of the methods of obtaining the wavelengths in the
           millimetre range is based on the separation of the high
           order harmonics in a klystron.  The separation can be done
           by means of a special resonator, such as a toroidal cavity
           which "gradually" feeds into a waveguide terminated with a
           moveable piston; the waveguide attenuates the fundamental
           wave.  This type of resonator can be particularly useful
           in extracting the 3rd harmonic.  The problem was investi-
           gated experimentally and the results are shown in the
           figure on p 573.  The curves in the figure show the output

Card 1/2

SOV-103-3-4-23/28

Separation of the Higher Harmonics in a Reflex Klystron by Means of Complex-Form Resonators

power of the 3rd harmonic (dashed curve) and of the fundamental as a function of the reflector voltage. The paper contains 1 figure and 1 French reference.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im M. V. Lomonosova (Physics Department of the Moscow State University imeni M. V. Lomonosov)

SUBMITTED: June 22, 1957

1. Klystrons--Performance    2. Cavity resonators--Applications
3. Wave guides--Performance

Card 2/2

GAPANOV, Viktor Ivanovich; IONOV, N.I., prof., retsenzent; NILENDER, R.A., prof., retsenzent; TSAREV, B.M., prof., retsenzent; BRAGINSKIY, V.B., red.; MURASHOVA, N.Ya., tekhn.red.

[Electronics] Elektronika. Moskva, Gos.izd-vo fiziko-matem. lit-ry. Pt.1. [Physical principles] Fizicheskie osnovy. 1960. 516 p.                                              (MIRA 14:3)
(Electronics)

GAPONOV, Viktor Ivanovich; BRAGINSKIY, V.B.; MURASHOVA, N.Ya., tekhn.red.

[Electronics] Elektronika. Moskva, Gos.izd-vo fiziko-matem.
lit-ry. Pt.2. [Electron-tube and semiconductor devices]
Elektrovakuumnye i poluprovodnikovye pribory. 1960.   592 p.
(MIRA 14:4)

(Electron tubes)        (Transistors)

BRAGINSKIY, V.; BUKHOVTSEV, B.

         Ruby amplifier of radio signals. IUn.Tekh,. 4 no.5:46-
48 My '60.                    (MIRA 13:7)
           (Masers)    (Rubies)

82431

S/056/60/038/03/32/033
B006/B014

24.4200

AUTHORS:    Braginskiy, V. B., Ivanenko, D. D., Rukman, G. I.

TITLE:    The Possibility of Making Laboratory Tests for the Purpose of Measuring the Propagation Rate of Gravitational Inter- action

PERIODICAL:    Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 3, pp. 1005-1007

TEXT:    New experiments for investigating gravitational waves have been suggested repeatedly (observation of gravitational radiation, verification of effects of the general relativity theory, Eötvös experiments, etc.). Measurement of the propagation rate of gravitational interaction has been suggested only in Ref. 5. The difficulties involved are discussed in de- tail. According to Ref. 6, the amplitude of a field at a distance R from the emitter may be expressed by $E_R = 2p_0 e^{i\omega t} R^{-3} \cos\theta \, (1+k^2 R^2/2 - ik^3 R^3/2+...)$, where $k = \omega/c_g$, and $c_g$ is the propagation rate of the gravitational field,

Card 1/3

82431

The Possibility of Making Laboratory Tests for     S/056/60/038/03/32/033
the Purpose of Measuring the Propagation Rate     B006/B014
of Gravitational Interaction

$p_0$ is the dipole moment (the dipole oscillates with the frequency $\omega$). This holds for distances R, which are small as compared to the wavelength, where $kR \ll 1$. Thus, measurement of $E_R$ permits the determination of $c_g$. The resulting effect is, however, extremely small ($\approx 10^{-17}$ rad if $c_g = 3 \cdot 10^{10}$ cm/sec; now it is possible to measure phase shifts up to $10^{-6}$ rad). When $\omega/2\pi = 200$ cps and $R = 1$ m, $k^2R^2/2 \approx 10^{-11}$. Such an amplitude change is measurable through codification of the frequency change of the oscillating dipole ($\sim 0.5$ cps) and demodulation of the change in the field amplitude along with a change in the oscillator frequency. A piezotransmitter (Weber, Ref. 1) with an appropriate amplifier could be used to measure the field strength. It should be accurate to within $10^{-11}$ (constant temperature of $0.1^\circ$C). A few other technical details are briefly described. Finally, the authors thank V. V. Migulin and M. S. Akulin for their discussions. Mention is also made of V. P. Kozyrev. There are 8 references, 5 of which are Soviet.

Card 2/3

The Possibility of Making Laboratory Tests for
the Purpose of Measuring the Propagation Rate
of Gravitational Interaction

82431
S/056/60/038/03/32/033
B006/B014

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State Univer-
sity)

SUBMITTED:    January 3, 1960

Card 3/3

NIKOL'SKIY, Vyacheslav Vladimirovich; FEDOROV, N.N., dots., retsenzent;
    BRAGINSKIY, V.B., kand. fiziko-matem. nauk, red.; PERKOVSKAYA,
    G.Ye., red. izd-va; GARINA, T.D., tekhn. red.

[Electromagnetic field theory] Teoriia elektromagnitnogo polia.
Moskva, Gos. izd-vo "Vysshaia shkola," 1961.  370 p.
                                        (MIRA 15:2)
1. Kafedra teoreticheskikh osnov radiotekhniki Moskovskogo
energeticheskogo instituta im. Molotova (for Fedorov).
                (Electromagnetic theory)

23627
S/188/61/000/003/001/002
B125/B203

6,4400

AUTHORS: Braginskiy, V. B., Rukman, G. I.

TITLE: Recording and measurement of electric signals of weak power

PERIODICAL: Moskovskiy Universitet. Vestnik. Seriya III. Fizika, astronomiya, no. 3, 1961, 3 - 9

TEXT: The present paper reports on the results of measurements of weak signals by a system with long accumulation time. The longest time used was $6 \cdot 10^3$ sec. For judging the amount of the small amplitude $U_0$ of the sinusoidal electric signal $U_0 \sin\omega t$ with its coherent separation from the background of the thermal noise $U_{therm}(t)$, it is necessary to evaluate

the quantities $B_i = \dfrac{2Cn}{\tau_0} \displaystyle\int_{t}^{t+\frac{\tau_0}{n}} \left[ U_0 \sin\omega t + U_{therm}(t) \right] \sin\omega t\, dt$ (2) statistically.

Here, n is the number of repetitions of measurements of $B_i$, $\tau_0/n = \tau$ is

Card 1/9

Recording and measurement of...

the time of accumulation, C a calibration factor $(\bar{B}_i = CU_o)$. This opera-
tion (2) was made by the measuring device described below. The recordable
minimum power $P_{min}$ is determined by the half-width of the test interval
$\epsilon(\alpha, n)$ for $U_o$. The theoretically attainable value of $P^o_{min}$ is $P^o_{min} =$

$$= \frac{\epsilon^2(\alpha, n)}{2R} = \frac{2kTt^2(\alpha, n)}{\tau(n-1)}.$$ Here, $t(\alpha, n)$ is a known coefficient dependent
on the number of repetitions of measurements n and the $(1-\alpha)$-probability
of the error. Fig. 1 shows the block diagram of the measuring device.
The power of the electric signal to be recorded was $1.35 \cdot 10^{-22} - 3.4 \cdot 10^{-20}$w.
Measuring method and evaluation of results: Fig. 2 shows the results of
measurement of five electric signals of the powers $1.35 \cdot 10^{-22}$; $5.4 \cdot 10^{-22}$;
$2.1 \cdot 10^{-21}$; $8.5 \cdot 10^{-21}$, and $3.4 \cdot 10^{-20}$ w. These powers were determined from
the known values of voltage applied to the divider and from the known
resistances in the divider. The quantities $\Delta_i = \bar{B}_{sing} - B_o$ are plotted
on the axis of ordinates, and the effective value of the admission poten-
tial $U_o/\sqrt{2}$ on the axis of abscissas. Also given are the mean values $\Delta_i$,
the verification intervals, and the number of repetitions of measurements
Card 2/9

23627

S/188/61/000/003/001/002

Recording and measurement of...     B125/B203

n. $B_{sing}$ is the new deflection of the galvanometer G (Fig. 1), and $B_0$ the deflection of this instrument in "zero position". 30 sec were required to determine each value of $\Delta_i$. The power of $8.5 \cdot 10^{-21}$ w was measured within 900 sec with an accuracy of $\pm$ 33 %. Table 1 gives the limiting values of the power $P_{min} = \dfrac{\varepsilon^2(0.99)}{R} \dfrac{[v.\ oersted]^2}{[ohm]}$ which can be recorded with the dependability 0.99 at various numbers of repetitions of measurements n and the same accumulation time $\tau$ for a single measurement. $P_0$ denotes the theoretical values of $P_m$ at equal n, $\tau$ and $\alpha$, but with $T = 293°K$. The quality factor $M = P_{min}/P^0_{min}$ varies between 4.7 and 7.2. Table 2 gives the results of measurement of the signal $P = 2.4 \cdot 10^{-21}$ w for $\tau_0 = 1$ hr at various times: $\tau_0/2n = 15$ sec, 30 sec, 60 sec. M can be reduced with a respective reduction of the zero drive and the fluctuations of the parameters by 30 - 40 %. By a considerable reduction of the zero drive it is also nearly possible to halve the total observation time $\tau_0$. The factor M can altogether be reduced to values of the order 1.6 -

Card 3/9

Recording and measurement of...

23627
S/188/61/000/003/001/002
B125/B203

2.5. With the use of amplifiers with low noise, M can be reduced to near-ly 1. The described method for recording and measuring weak electric powers and the limiting values of recorded powers attained may be general-ized for measurements of a weak mechanical signal if the transducer gain of the electromechanical pickup is sufficiently near 1. Discussion of re-sults: Under laboratory conditions it is possible to record, in $6 \cdot 10^3$ sec, signals of $4.3 \cdot 10^{-23}$ w (with a dependability of 0.99), or to measure a power of $3.4 \cdot 10^{-20}$ w with an accuracy of $\pm 7 \%$ if frequency and phase of the signal are known. If a measuring instrument with $M \sim 1$ can be devel-oped, it is possible to record, within the same $6 \cdot 10^3$ sec, a signal of $9.2 \cdot 10^{-24}$ w. At temperatures up to the order of $1^\circ K$, the principally pos-sible separation time of the signal ($10^5 - 10^6$ sec) permits, with $M \sim 1$, the recording of a signal of $2 \cdot 10^{-27} - 2 \cdot 10^{-28}$ w (with a dependability of 0.99). These limiting values should be considered when planning finest physical experiments. The authors thank Professor A. A. Kharkevich, Professor V. V. Migulin, R. L. Stratonovich, and P. S. Land for useful discussions, as well as V. K. Martynov for assisting in the measurements. There are

Card 4/9

23627
S/188/61/000/C03/001/002
B125/B203

Recording and measurement of...

2 figures, 2 tables, and 3 references:  2 Soviet-bloc and 1 non-Soviet-
bloc.  The reference to the English-language publication reads as follows:
Weber J. Phys. Rev., 117, no. 1, 306 - 317, 1960.

ASSOCIATION: Kafedra teorii kol'baniy (Department for the Theory of
             Oscillations)

SUBMITTED:   February 1, 1961

Fig. 1:  Block diagram of the measuring device.
Legend:  (1) generator ЗГ-10 (ZG-10), (2) divider, (3) preamplifier, (4)
         28-И (28-I) amplifier, (5) synchronous detector, (6) phase converter.
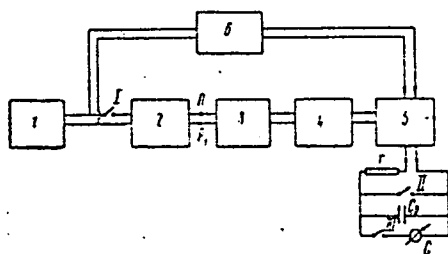


Card 5/9

9.2560

9,2580 (1163)

24875

S/109/61/006/007/015/020
D262/D306

AUTHORS:     Braginskiy, V.B., Dianova, V.A., and Mustel', Ye.R.

TITLE:       Investigation of the operation of a frequency multi-
             plier using the non-linear capacity of the p-n-
             -junction

PERIODICAL:  Radiotekhnika i elektronika, v. 6, no. 7, 1961,
             1173 - 1177

TEXT: The above problem was investigated for large coefficients of
multiplication (up to n = 50). Main scheme of the multiplier is
given in Fig. 2. The multiplier consists of a 70 ohm coaxial line
and a standard coaxial - waveguide passage. In the gap is situated
diode 1, with its non-linear capacity. An alternating potential
from a generator (frequency range: 184 - 600 Mc/s) is connected to
the input of the multiplier through a constant attenuator (10-12
db). Maximum power from the generator: 3.5 W. Coaxial piston 2 and
the non-linear element form the input contour. Piston 2 is isola-

Card 1/5

24875

Investigation of the ...

S/109/61/006/007/015/020
D262/D306

ted from the outside tube of the coaxial. The output contour is
formed by coaxial piston 3 and two quarterwave beakers 4. Through
a diaphragm it is connected with a rectangular resonator which
filters out the harmonics of a corresponding n-number. The Q-fac-
tor of the resonator is 200, which reduces the neighboring harmo-
nics with 20 db in comparison. Without filtering, these harmonics
are 5 times smaller, than the chosen harmonics. The output signal
is fed into a spectroanalyzer, specially calibrated for power, or
into a standard power meter. The output power of the multiplier is
shown graphically as a function of the number of harmonics. Input
signal changed from 184 to 600 Mc/s, output signal (9000 Mc/s) and
input power remained constant. The ordinate represents the ratio
of the output power of n-th harmonics to that of the 49th harmonics.
-At input power $P_c$ = 100-150 mW, the output power saturates, there
for smaller coefficients of multiplication. For the investigation
of phase stability 2 identical multipliers were used, with two
valves and measuring line of the same direction. The signal came
from a common generator. After 1½/2 hours of warming up, the device

Card 2/5

24875

Investigation of the ...

S/109/61/006/007/015/020
D262/D306

was working for 9 hours without break. The amplitude changed by 19 %. Change in phase difference was less than 60°. To investigate the possibilities of modulation, an additional 10 Mc/s alternating signal was fed in. The spectro-analyzer showed a split of the line into components, standing at 10 Mc/s from each other. With large modulation it is possible to redistribute the energy between the central line and the side components. The greatest observed output power: 2.5 mW (n = 36, $\tau = (R_sC)_{u = -10v} = 0.36 \cdot 10^{-12}$ sec) the input power being of the order of 250 mW. This means that the transformation loss was not more than 20 db, which is 11 db better than the minimum loss observed, when an active non-linear element is used with an ideal filtering system on the same harmonics. The coefficient of power transformation and the magnitude of output power are slightly higher than those for a two-cascade multiplier. This type of multiplier can be used in measurements and also as a high-stability heterodyne. To achieve power of the order 1 mW, the time constant of p-n junction of the diode should be better than 1 · $10^{-12}$ sec. There are 6 figures and 7 non-Soviet-bloc referen-
Card 3/5

24875

Investigation of the ...

S/109/61/006/007/015/020
D262/D306

ces. The references to the 4 most recent English-language publications read as follows: C.H. Page, Harmonic generation with ideal rectifiers, Proc. I.R.E., 1958, 46, 10, 1738; D. Leenov, A. Uhlir, Jr., Generation of harmonics and subharmonics at microwave frequencies with p-n junction diodes, Proc. I.R.E., 1959, 10, 1724; D.B. Leeson, S. Weinreb, Frequency multiplication with non-linear capacitors — A circuit analysis, Proc. I.R.E., 1959, 12, 2076; R. Lowell, M. Kiss, Solid-state microwave power sources using harmonic generation, Proc. I.R.E., 1960, 7, 1834.

ASSOCIATION: Fizichesky fakul'tet Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova, kafedra teorii kolebaniy (Faculty of Physics, Moscow State University im. M.V. Lomonosov, Department of Theory of Oscillations)

SUBMITTED: November 17, 1960

Card 4/5

BRAGINSKIY, V.B.; KUKMAN, G.I.

Recording and measuring of low-power electric signals. Vest.
Mosk. un. Ser. 3: Fiz., astron. 16 no.3:3-9 My-Je '61. (MIRA 14:7)

1. Kafedra teorii kolebaniy Moskovskogo gosudarstvennogo universiteta.
(Electric measurements)

9.9867

26426
S/056/61/041/001/021/021
B102/B23*

AUTHORS:      Braginskiy, V. B., Rukman, G. I.

TITLE:        The possibility of recording gravitational radiation
              under laboratory conditions

PERIODICAL:   Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41,
              no. 1(7), 1961, 304 - 305

TEXT:  It is known that the intensity of gravitational radiation occurring
as a result of excitation of elastic, longitudinal natural oscillations
in cylindrical bodies is higher than that attained by using other
radiation devices (see J. Weber. Phys. Rev., 117, 306, 1960). The
present "Letter to the Editor" discusses the possibility of recording or
measuring such gravitational radiation as has been mentioned above, the
intensity of which ranges in the order of $10^{-2}$ w. The consumption of
such an oscillating system (consisting of $n = 2.0^4$ cylinders with a cross
section $S = 10^4$ cm$^2$, oscillation amplitudes $\xi = 10^{-5}$, and a frequency of
$10^6$ cps) would amount to about $10^6$w. Recording or measuring such a small
power as $10^{-25}$w is extremely difficult. The smallest measurable power is

Card 1/4

26426
S/056/6 /04 /00 /02 /02
B 02/B23

The possibility of recording ...

given by $P_{min} = 2kTQ^2(\alpha, m)M/\tau(m-1)$, where T is the temperature of the signal source, $\tau$ the period of time required for one measurement, m the number of measurements, $Q(\alpha, m)$ the reliability index of the result obtained from m selected measurements, $\alpha$ the degree of reliability of a measurement result, and M the quality factor of the whole measuring device. $P_{min} = 4.10^{-23}$ w is possible on the condition that $\alpha = 0.990$, $T = 300^\circ K$, $\tau m = 6.10^{-3}$ sec, which corresponds to $M \approx 5$. If $\tau m$ can be extended to $6.10^5$ sec (about 8 hr ) and $M \approx 1$, $P_{min} = 10^{-25}$ w can be reached. In order to achieve this, it would be necessary that the total power emitted from the radiator be absorbed by the measuring device and converted with a 100 % efficiency. As this is not the case, the actual emitted power had to exceed $10^{-25}$ w by $10^{12} - 10^{15}$. In the following, an improved experimental arrangement is proposed. The radiation system consists of two groups each having n parallel cylinders. If oscillations are excited in these groups in phase, the emitted power (gravitational waves' turns out to be

Card 2/4

The possibility of recording ...

26426
S/056/61/041/001/021/021
B102/B231

about 4 times higher than that emitted by one group. In case of excitation in phase opposition and maintaining distance and orientation of the cylinders, only the octupole radiation is conserved, which is considerably weaker than the quadrupole radiation of a single group. By displacing the oscillation phase in one group by $\pi$, radiation losses occurring in the other group can be changed synchronously. The modulation depth of the power required for excitation amounts to $2.10^{-25}$ w for the values of $S$, $n$, $\xi$, $\varphi$ and $v_{sound}$. This direct effect of power modulation is measurable. Modulation can be checked additionally by changing the mutual orientation of the cylinders. The experimental arrangement must, of course, electrostatically and acoustically be screened. When the inverse piezo-effect is applied for exciting oscillations, $BaTiO_3$ is an adequate material for cylinders. According to L. I. Bershteyn (Izv. AN SSSR, seriya fizich., 14, 145, 1950) and A. N. Malakhov, a spectral density of power (caused by amplitude fluctuations of $10^{-9} - 10^{-10}$ w/cps) equivalent to a noise temperature of $T \approx 3.10^{13}\ ^{\circ}K$ is to be expected when the system is excited up to $10^{6}$ cps and the phase

Card 3/4

BRAGINSKIY, V. B., RUDENKO, V. N. and RUKMAN, G. I.

"An Experimental Investigation of The Influence of an Intermediary Substance on The Gravitational Interaction"

report presented at the Intl. Conference on Relativistic Theories of Gravitation, Warsaw, Poland, 25-31 July 1962.

Physics Faculty of the Moscow State University, USSR.

BRAGINSKIY, V.B.; RUDENKO, V.N.; RUKMAN, G.I.

Experimental study of the effect of an intermediate medium on gravitational interaction. Zhur. eksp. i teor. fiz. 43 no.1:51-58 Jl '62.                                                    (MIRA 15:9)

1. Moskovskiy gosudarstvennyy universitet.
        (Gravity—Measurement)

L 17234-63          BDS/EWT(1)/ES(v)--AFFTC--Pe-4/Pg-4/Po-4/Pq-4--TF

ACCESSION NR: AP3005674                S/0188/63/000/004/0079/0083

AUTHOR: Braginskiy, V. B.; Rukman, G. I.

TITLE: Experimental study of the possibility of observing gravitational radiation of extraterrestrial origin

SOURCE: Moscow. Universitet. Vestnik. Seriya III. Fizika, astronomiya, no. 4, 1963, 79-83

TOPIC TAGS: gravitational radiation, gravity radiation, gravitational wave, gravity wave, extraterrestrial gravitational wave, extraterrestrial gravitation

ABSTRACT: The results of an attempt to detect extraterrestrial gravitational radiation in the laboratory of the Moscow State University are described. Two types of experiments were conducted. In the first, two 70-kg masses connected by two rods and a spring were suspended from wires about 2 m long and induced to oscillate by an electrostatic force. The measurement of small displacements of the two masses during antiphase vibrations caused by internal

Card  1/4

L 17234-63

ACCESSION NR: AP3005674

forces was performed by an electronic system which was described in
an earlier paper (Zhetf, 43, 1(7), 50, 1962). The Q-factor of the
antiphase vibrations of the test masses, as determined from the res-
onance curve, was 25.3. In the second experiment, two 1-kg test mas-
ses were fixed to a horizontal rod 80 cm in length, and the rod was
suspended from a wire 40 cm in length. The natural frequency of the
torsional vibrations was $13 \times 10^{-3}$ cps (period, 78 sec). The Q-fac-
tor of the torsional vibrations was 15. The electronic orientation
of the axes of the two masses was such as to change significantly
the directional diagrams of the gravitational receivers in respect
to the sun and the stars as influenced by the diurnal rotation of
the earth. In three hours, during which the earth and quadrupoles
rotated 45°, the maxima and the minima of the diagram for a larger
part of the total solid angle exchange places. Therefore, the
presence of a localized external source of gravitational radiation
could cause a difference in the vibrations of the test masses which
may be detected by comparing statistical characteristics of such vi-
brations. Statistical treatment of the experimental data shows that

Card 2/4

L 17234-63

ACCESSION NR: AP3005674

neither a variation of the mean square of the variable force caus-
ing antiphase vibrations of the gravitational quadrupole ($\bar{F}^2$) nor
variation of the mean square of the force causing torsional vibra-
tions could be considered significant. The smallest value of the
change $\delta(\sqrt{\bar{F}^2})$ which could have been detected in the experiments
was calculated from the dispersion of the mean square of the fluc-
tuation force interactions ($\bar{F}^2$) on the test masses. It was de-
termined that it was possible in the first experiment to detect
that $\delta(\sqrt{\bar{F}^2})$ was equal to $9.4 \cdot 10^{-3}$ dyne and in the second experi-
ment to detect that $\delta(\sqrt{\bar{F}^2})$ was equal to $4.2 \cdot 10^{-7}$ dyne. In both ex-
periments the reliability was estimated to be 0.95. In a later
variation of the second experiment, the test masses were increased
to 10 kg and the distance between them to 2.7 m. The mechanical
system was placed in a nonmagnetic jacket at a pressure
$p \leqslant 1.5 \times 10^{-2}$ mm Hg. Under these conditions the smallest change
that could be detected was determined to be $\delta\sqrt{\bar{F}^2} = 2 \times 10^{-7}$ dyne,
corresponding to a mechanical power of $1.6 \times 10^{-15}$ erg/sec. The
natural frequency of vibration of the system was $24 \times 10^{-3}$ cps; the
Q-factor was 220. The largest value (upper limit) of the Fourier

Card 3/4

L 17234-63

ACCESSION NR: AP3005674

component of the curvature tensor which could have been detected in these experiments was determined as $2.6 \times 10^{-33}$ $cm^{-2}$ (rad/sec). The upper limit of the gravitational radiation power which could have been detected was $3.5 \times 10^{16}$ erg/(sec/cm$^2$)/(rad/sec). "The authors thank Professor V. V. Migulin for his valuable discussions, and V. K. Marty*nov, P. M. Nasushchnov, and A. B. Manukin for participating in the measurements and the building of the apparatus." Orig. art. has: 2 figures and 3 formulas.

ASSOCIATION: Kafedra teorii kolebaniy [Moskovskiy gosudarstvenny*y universitet] (Department of Oscillation Theory [Moscow State University])

SUBMITTED: 22Jan63      DATE ACQ: 06Sep63        ENCL: 00

SUB CODE: PH            NO REF SOV: 001           OTHER: 005

Card 4/4

BRAGINSKIY, V.B.; MINAKOVA, I.I.; STEPUNIN, P.M.

Low power absolute measurements in the microwave band. Prib. i
tekh. eksp. 8 no.5:130-133 S-O '63.                    (MIRA 16:12)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta.

L 41342-65    EWT(1)/EWP(m)/EEC(t)/T   Po-4/Pq-4/Pg-4/Pl-4   IJP(c)  S/0056/63/044/005/1562/1566

ACCESSION NR: AP3000049

AUTHOR: Braginskiy, V. B.

TITLE: On the limits determining the possibility of measuring gravitational effects

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 44, no. 5, 1963, 1562-1566

TOPIC TAGS: detection of gravitational wave, testmass distance variation

ABSTRACT: The physical limits imposed by existing technology on gravitational experiments utilizing the measurement of field intensity or curvature tensor components by the motion of test masses are discussed. The noise effects of mechanical thermal fluctuations and electromagnetic field fluctuations are considered to be the major obstacle. Calculations are carried out for a system of test masses inside, but not bound to, a highly conductive screen. This setup is possible under terrestrial conditions through use of a magnetic suspension system, which at the present state of art, can support 25 kg. The screen is cooled and evacuated to effect further reduction in the mechanical coupling between the screen and the test masses. The calculations show that

L 41342-65
ACCESSION NR: AP3000049

/

differences in the forces exerted by gravitational waves on the test masses
can be used, at least in principle, to detect gravitational waves under
laboratory conditions within the present state of the art. After all
"nongravitational" noise is eliminated by a number of possible methods, the
chief remaining technical difficulty is the design of a highly sensitive device
to measure small periodic variations of the distances between the test masses.
The capacitance sensor used by the author and optical methods proposed by
M. Ye. Gertsenshteyn and V. I. Pustovoyt (ZhETF, 43, 605, 1962) could possibly
be used for this purpose. Orig. art. has: 1 figure and 5 formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: 01Nov62                    ENCL: 00              SUB CODE: ME, GF

NO REF SOV: 005                       OTHER: 009            ATD PRESS: 2027

Card 2/2

L 48103-65    EWT(1)/EWP(m)/EWG(v)/EEC(t)/T   Po—4/Fe-5/Pq—4/Pg—4/Pae—2/Pl—4   IJP(c)
Gw

ACCESSION NR:  AT5006353                                    E/3141/63/123/012/0096/0108

AUTHOR:  Braginskiy, V. B.; Rudenko, V. N.

TITLE:  Detection of gravitational effects

SOURCE:  Kazan. Universitet. Uchenyye zapiski, v. 123, no. 12, 1963. Gravitatslya i
tecriya otnositel'nosti; tematicheskiy sbornik. (Gravitation and the theory of
relativity), 96-108

TOPIC TAGS:  gravity, relativity theory, astronomy, astrophysics

ABSTRACT:  The authors state that only two of the predicted effects of the general
theory of relativity--perihelion motion of Mercury, and deflection of starlight
passing close to the sun--have been successfully detected by astronomical observa-
tion, the second with less than desirable accuracy.  A third--frequency shift of
electromagnetic radiation in a gravitational field--has been measured only in a
weak field under circumstances allowing the possibility of other influences than
gravitation.  They note that despite great improvements in laboratory techniques in
such fields as reduction of noise in electronic detecting instruments, attainment
of low temperatures and high vacuums and statistical methods, there has been little
experimental work on gravitational effects in the past forty years (exceptions are

Card 1/2

L 48103-65

ACCESSION NR: AT5006353

noted). Citing an equation of Lagrange, they state that if all its implications could be experimentally demonstrated it could be shown that the speed of propagation of gravitational effects is finite. They then suggest that the best initial approach to the demonstration of gravitational effects is the study of limitations on possibilities of measurements of small forces acting on test masses, starting from the level of experimental techniques already attained. Such possibilities and limitations are discussed under the following headings: 1) fluctuating forces acting on test masses; 2) evaluation of measurability of certain gravitational effects of the general theory of relativity in the short order and wave zones; 3) sources of gravitational radiation in laboratory conditions and of extraterrestrial origin; 4) gravitational effects not connected with the general theory of relativity. Analysis is primarily mathematical and theoretical, but a number of remarks are made on practical capabilities and limitations of measurement in the various fields. Orig. art. has 1 figure, 24 formulas

ASSOCIATION: none

SUBMITTED: 00                               ENCL: 00                      SUB CODE: AA, GP

NO REF SOV: 014                             OTHER: 015

Card 2/2

ACCESSION NR: AP4041042                S/0120/64/000/003/0160/0164

AUTHOR: Braginskiy, V. B.

TITLE: Sensitive scales with a radio-engineering system of registration and calibration

SOURCE: Pribory* i tekhnika eksperimenta, no. 3, 1964, 160-164

TOPIC TAGS: sensitive scale, weight change detection, remotely controlled scale, periodic weight change, static weight change, small weight change, relativistic gravitation effect

ABSTRACT: A description is given of sensitive scales for measuring the weight of thin films and gas density and for use in magnetic and gravitation tests. The scales can detect a static weight change of approximately $2.10^{-12}$ and a periodic relative weight change of approximately $1.10^{-6}$ within a period of $1.4 \times 10^3$ sec with a confidence of 0.95. A radio-engineering system, used for recording oscillations and for calibration, permits remote control of the scales. The scales are rigidly fixed inside a vacuum in a demountable brass and bronze casing.

Card 1/3

ACCESSION NR: AP4041042

Recordings were obtained of scale vibrations in the static state, and of their response to a short force pulse imparted to one of the weights of the scales by the system of electrostatic calibration. Pulse magnitude was $3.5 \times 10^{-3}$ dyneseconds. The scale of vibrations on the recorder tape can be determined from the pulse magnitude, moment of inertia, and the period of natural torsion oscillations. Although visible vibrations had an amplitude of $6.10^{-6}$ cm, even smaller amplitudes can be determined. A statistically resolving magnitude for a 700-sec recording period was $1.1 \times 10^{-6}$ cm with a 0.95 confidence, and $1.9 \times 10^{-6}$ cm with a 0.999 confidence. The mean square value of the fluctuation amplitude of the scale under static conditions was $1.10^{-6}$ cm to $1.5 \times 10^{-6}$ cm. A relatively high equivalent temperature, $T_{eq} \cong 5.10^5$ to $10^6 K$, corresponded to this value. Heat fluctuations of the scale therefore led to no significant measurement errors. Apparently it will also be possible to apply the method for measuring small weight variations to the detection, under laboratory conditions, of the relativistic gravitation effect. A basic difficulty in the organization of such an experiment will be to avoid transmitting to the system a mechanical impulse in the vertical direction during the mass heating period.

Card 2/3

ACCESSION NR: AP4041042

Warming-up can be achieved with electronic or light rays. The me-
chanical impact transmitted to the scales during heating by electronic
or light rays is proportional to the warming-up time; the mechanical
impulse from the expected effect is proportional to the quadrature
time. Thus, the expected effect can be eliminated if mechanical
action from the heating appears to be of the same order. Orig.
art. has: 3 figures and 1 formula.

ASSOCIATION: Fizicheskiy fakul'tet MGU (Physics Faculty, MGU)

SUBMITTED: 24Jun63                ATD PRESS: 3059                ENCL: 00

SUB CODE: GP                      NO REF SOV: 005                OTHER: 003

Card 3/3

BRAGINSKIY, V.B.; MINAKOVA, I.I.

Effect of the system of measurement of small displacements on the dynamic properties of mechanical oscillatory systems. Vest. Mosk. un. Ser.3:Fiz., astron. 19 no.1:83-85 Ja-F '64. (MIRA 17:4)

1. Kafedra teorii kolebaniy Moskovskogo univorsiteta.

L 62150-65     EEO-2/EWT(d)/EEC-4/EED-2

ACCESSION NR:  AP5011503          UR/0188/65/000/002/0065/0070

AUTHOR:      Braginskiy, V. B.          538.561

TITLE:      Detection of weak forces acting on vibrational systems with high Q

SOURCE:     Moscow. Universitet. Vestnik. Seriya 3. Fizika, astronomiya, no. 2, 1965, 65-70

TOPIC TAGS: weak signal detection, quantile, oscillation amplitude distribution, high Q system, stationary fluctuating noise, transient time, resolving power

ABSTRACT:    The purpose of the investigation was to find means of detecting weak signals against a noise background under conditions when the signal duration is shorter than the transient time of the detection system.  To this end, the author analyzes a vibrating mechanical system with one degree of freedom,  acted upon by a certain force for a short time, and also by a stationary normal fluctuation force due to thermal fluctuations.  The oscillating system is assumed to have

Card  1/2

L 62150-65
ACCESSION NR: AP5011503

2

high Q. Relations are obtained for the minimum detectable force and
power for such systems and for such signals, and the possibility of
increasing the resolution in some physical experiments is discussed.
The effect of friction on the minimum detectable signal is dealt with.
The quantiles are calculated for the amplitude-oscillation distribu-
tion in the system, but although the results are theoretically appli-
cable for the detection of a weak signal with a high-Q receiver, the
possibility of using the presented calculations for communication pro-
blem calls for a special analysis. 'The author thanks R. L. Stratono-
vich for valuable discussions.' Original article has: 16 formulas

ASSOCIATION: Kafedra fiziki kolebaniy Moskovskogo gosudarstvennogo
universiteta (Department of Oscillation Physics, Moscow State Univer-
sity)

SUBMITTED: 10Apr64      ENCL: 00      SUB CODE: EC, GP

NR REF SOV: 004      OTHER: 005

Card 2/2 ДДР

BRAGINSKIY, V.B., kand. fiziko-matematicheskikh nauk

Gravitational waves and the attempts to detect them.
Zem.i vsel. 1 no.5:23-26 S-O '65.

(MIRA 18:11)

L 5117-66    EWT(1)/EWA(h)
ACCESSION NR: AP5020132

UR/0109/65/010/008/1535/1536
621.373.421.001.5

AUTHOR: Braginskiy, V. B.

TITLE: Signal source with narrow natural line width

SOURCE: Radiotekhnika i elektronika, v. 10, no. 8, 1965, 1535-1536

TOPIC TAGS: signal generator

ABSTRACT: It is suggested that the I. W. Beams et al. magnetic-suspension vacuum supercentrifuge (Rev. Sc. Instr., 1961, 32, 4, 645) be used as a narrow-line signal generator. A spectral density of frequency deviation (caused by the fluctuations of gas-molecule pressure on the rotor) is calculated to be about $1.5 \times 10^{-18}$ rad/sec. The spectral density for a representative electron-tube oscillator is about $1.3 \times 10^{-10}$ rad/sec. Hence, a signal generator with a very narrow line and a frequency up to 1 Mc is held possible. Such a generator might help in measuring $10^{-17} - 10^{-20}$-cm displacements in some gravitational experiments. "In conclusion, the author wishes to thank Yu. M. Romanovskiy for valuable discussions." Orig. art. has: 1 formula.

Card 1/2

L 5117-66
ACCESSION NR: AP5020132
ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University)

SUBMITTED: 21Oct64          ENCL: 00          SUB CODE: EC

NO REF SOV: 007          OTHER: 002

Card 2/2

L 58971-65    EWT(1)   IJP(c)

ABSTRACT: A general review is made of gravitational radiation and detection possibilities. Emphasis is placed on sources and detectors of gravitational radiation. Double stars, hypothetical sources, extraterrestrial high-frequency sources, and possible terrestrial sources are discussed. The section on detectors deals with restrictions imposed on detectors, limitations of such devices, and detectors utilizing bodies whose length exceeds its other dimensions, such as the apparatus being developed by J. Weber. It is suggested that detection by extended bodies may be conducted by means of phonon counters which can record minute deformations of the order $\Delta \ell / \ell = 10^{-25}$. The theory of such counters, with a view toward detection of

Card 1/2

L 58931-65

ACCESSION NR: AP5018608

gravitational radiation, has been discussed in several Soviet papers (FTT, v. 4, no. 8, 1962, p. 2283; FTT, v. 5, no. 2, 1963, p. 667; Izvestiya Vuzov, Fizika, no. 5, 1963, p. 6).  The review is based on 48 papers, 28 of which are Soviet.    Orig. art. has:  20 formulas and 2 tables.

[CS]

ASSOCIATION:  none

SUBMITTED:  00                      ENCL:  00                    SUB CODE: AA, CB

NO REF SOV:  028                    OTHER:  020                  ATD PRESS:  4051

Card  2/2

ACC NR: AP6021945    (A)                    SOURCE CODE: UR/0188/66/000/002/0060/0068

AUTHOR: Braginskiy, V. B.; Martynov, V. K.

ORG: Department of Physics of Oscillations (Kafedra fiziki kolebanyi)

TITLE: Investigation of the influence of an intermediate body on gravitational interaction

SOURCE: Moscow. Universitet. Vestnik. Seriya III. Fizika, astronomiya, no. 2, 1966, 60-68

TOPIC TAGS: gravitation effect, general relativity theory

ABSTRACT: The authors describe an experiment undertaken for the purpose of observing the influence of an intermediate body on the static gravitational interaction. This experiment is similar to that performed by one of the authors in 1961 (Braginskiy et al., ZhETF v. 43, no. 7, 52, 1962), using a modulation technique with an electro-mechanical transducer and electronic circuitry to separate the signal from the noise. The experiments were made with a torsion pendulum consisting of two identical masses (25 g each) and a tungsten wire. One mass served as a trial body and the other mass as part of a variable capacitor serving as a pickup for the oscillations. The torsion pendulum is kept in vacuum not worse than $10^{-4}$ mm Hg. From the change in capacitance it was possible to deduce whether a third body changes the static/gravitational force on the other body. The small changes in the oscillation amplitude were processed by means of a statistical method similar to that used by Etvos, Pekar, and Fekete (Ann.

Card 1/2                          UDC: 521.12: 531.5

ACC NR: AP6031945

der Phys. v. 68, 11, 1922). It is concluded, with 95% reliability, that within a level of $1.5 \times 10^{-11}$ the intermediate body exerts no static gravitational interaction. Possible consequences of this experiment are discussed. It is mentioned that the accuracy of such an experiment can be increased by 1 - 1.5 orders of magnitude. The authors thank Prof. V. V. Migulin and G. I. Rukman for valuable discussions, and Ya. M. Dzhileykin and P. M. Nasushchnov for help with the work. Orig. art. has: 3 figures and 3 formulas.

SUB CODE: 20/    SUBM DATE: 05Nov65/    ORIG REF: 008/    OTH REF: 005

Card    2/2

L 07275-67    EWT(1)    GG

ACC NR: AP6025279                    SOURCE CODE: UR/0188/66/000/003/0126/0128

AUTHOR: Braginskiy, V. B.

ORG: Department of Oscillation Physics , Moscow State University (Kafedra fiziki kolebaniy, Moskovskiy gosudarstvennyy universitet)

TITLE: Concerning one effect of ponderomotive action of electromagnetic radiation on a trial body

SOURCE: Moscow. Universitet. Vestnik. Seriya III. Fizika, astronomiya, no. 3, 1966, 126-128

TOPIC TAGS: electromagnetic radiation, radiation pressure, laser radiation, pendulum, acoustic wave, thermoelasticity

ABSTRACT: In view of the fact that ponderomotive effects have recently been used to measure laser energies, based on the pressure produced by the electromagnetic wave, the authors point out one parasitic effect which occurs in such measurement methods. Since such methods usually employ trial bodies in the form of plates in torsion pendulums, the laser pulse causes the working plate of such a pendulum to become heated and the nonstationary temperature field produces in the plate thermoelastic acoustic waves, which can cause the system as a whole to vibrate with a

Card 1/2                              UDC: 621.378.325.08

L 07275-67

ACC NR: AP6025279

certain amplitude. Thermoelastic waves can also be produced by fluctuations of the light flux incident on the trial body. The present article derives an approximate quantitative estimate of this effect by representing the measuring apparatus in the form of two series-connected coupled oscillators and calculating their equations of motion with allowance for the temperature variation. It is shown that while in recently described systems the error is only a fraction of one per cent, the use of materials with larger specific heat and especially measurements of higher frequencies may cause the thermoelastic effect to become comparable with the effect of the radiation pressure. The natural frequency of the plate used in the pendulum also can affect the accuracy of the results. The authors thank I. I. Minakova for valuable discussions. Orig. art. has: 1 figure and 6 formulas.

SUB CODE: 20/     SUBM DATE: 13Dec65/     ORIG REF: 005/     OTH REF: 004

Card 2/2

ACC NR: AP7001219          SOURCE CODE: UR/0141/66/009/006/1196/1201

AUTHOR: Braginskiy, V. B.; Manukin, A. B.

ORG: Moscow State University (Moskovskiy gosudarstvennyy universitet)

TITLE: One radiophysical method of measuring small mechanical vibrations

SOURCE: IVUZ. Radiofizika, v. 9, no. 6, 1966, 1196-1201

TOPIC TAGS: vibration measurement, test method, mechanical vibration

ABSTRACT: A circuit illustrating the ultimate capabilities of parallel plate capacitor pickup method of measuring small mechanical vibrations is shown in Fig. 1. Capacitor C, formed by modifying the tuning fork construction (see Fig. 2), is included in the transistor (P-401) oscillator circuit. To measure the minimum detectable distance between the vibrating capacitor plates the fork is made to resonate with frequency $f_M$. This distance may be calculated from the value of $f_M$, fork driving generator (1) amplitude U, constant bias V, and capacitor plate area. The value of the output signal corresponding to this distance may be measured by a galvanometer or a voltmeter. The output signal is generated as follows. The oscillator signal (nominally 5 Mc) is frequency

Card 1/3               UDC: 621.317.39:531.7

ACC NR:  AP7001219

modulated by capacitor C and mixed with a reference signal (output frequency, approximately 0.1 Mc). The resulting signal is applied to an amplifier, tuned to a frequency slightly different from the mixer
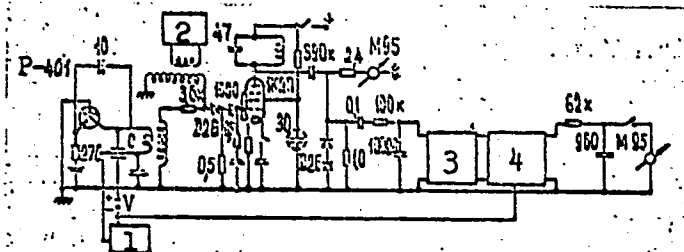


Fig. 1.  Mechanical vibration measurement circuit

1 - Driving generator; 2 - reference mixer oscillator; 3 - amplifier; 4 - synchronous detector.

output frequency, which converts FM into an amplitude-modulated signal. The AM signal is amplified, detected, and measured. Tests were made to establish the minimum detectable mechanical vibration amplitude. At

Card 2/3

ACC NR: AP7001219

$f_M$ = 0.1 and 400 cps these amplitudes were 2 x $10^{-8}$ cm and 3 x $10^{-11}$ cm, respectively, with a 0.95 confidence index. The accuracy of measurement and consequently the minimum detectable vibration amplitude is
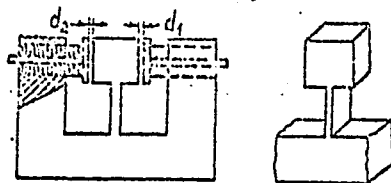


Fig. 2.  Tuning fork construction modelling
a double capacitor

analyzed as a function of oscillator amplitude and frequency deviation caused by shot effect, flicker noise, microphonics, and mixer noise. If the shot noise is assumed to be predominant, the spectrum density of oscillator frequency deviation may be calculated from the values for the minimum detectable vibration amplitudes.  For the above values these are 4 x $10^3$ $sec^{-1}$ and 1.7 $sec^{-1}$, respectively.  Orig. art. has: 3 figures and 3 formulas.                                        [WA-75]

SUB CODE:  14/     SUBM DATE:  27Sep65/     ORIG REF:  006/
Card 3/3          OTH REF:  003 / ATD PRESS:  5111

L 63228-65   EWT(1)   IJP(c)
ACCESSION NR:   AP5016393

UR/0120/65/000/006/0183/0187
535.218:535.231.6-2

AUTHOR: Braginskiy, V. E., Minakova, I. I.; Stepunin, P. M.

TITLE: Absolute energy and power measurements in the visible wavelength range by registering the electromagnetic pressure

SOURCE: Pribory i tekhnika eksperimenta, no. 3, 1965, 183-187

TOPIC TAGS: absolute high energy measurement, absolute light momentum measurement, absolute light pressure measurement, visible light energy, electromagnetic pressure

ABSTRACT: The ponderomotor action of electromagnetic radiations has been used in the past for measuring the electromagnetic energy and momentum in the millimeter and centimeter wave range. Recently, various authors proposed (V. B. Braginskiy, I. I. Minakova, P. M. Suspunin, PTE, 1963, no. 5, 130; L. O. Cock, W. L. Flowers, C. B. Arnold, Proc. IRE 1962, 50, no. 7, 1736) and extension of this method to measurements in the visible region. The present paper describes the operating principles, design, and results of testing of such a device capable of absolute measurements of short light
Card 1/2

L 63228-65

ACCESSION NR: AP5016393

4

pulses in the 0.5-100 Joule range and of continuous radiation in the 2-500 .W range. It consists of an electronic device for small shift registration and contains a force calibration unit. Test pulses are $10^{-3}$ sec. long. The relative registration error is 2%; the relative accuracy during absolute readings is 22%. Estimates of the limits of applicability of the method and of the necessary registration time intervals are also given. "The authors thank L. P. Lisovskiy, L. A. Rivlin, and Ye. N. Volkova for assistance during the investigation." Orig. art. has: 6 formulas, 3 figures, and 1 table. /08/

ASSOCIATION: Fizicheskiy fakul'tet MGU (Physics Department, MGU)

SUBMITTED: 04May64          ENCL: 00          SUB CODE: EC, EM

NO REF SOV: 002          OTHER: 001          ATD PRESS: 4049

Card 2/2

BRAGINSKIY, V.Ya.

Change-over to a continuous packaging line for refined sugar.
Sakh. prom. 32 no.12:47-48 D '58.                    (MIRA 11:12)

1.Odesskiy rafinadnyy zavod.
          (Sugar industry--Equipment and supplies)

BRAGINSKIY, V.Ya.

Remodeling the condensate assembly of the Odessa Sugar Refinery.
Sakh.prom. 33 no.7:38-40 Jl. '59.          (MIRA 12:11)

1. Odesskiy rafinadnyy zavod.
        (Odessa--Sugar machinery)

BRAGINSKIY, V.Ya.

Over-all mechanization of packing and weighing operations on re-
fined sugar production line. Sakh.prom. 33 no.12:35-36 D '59.
(MIRA 13:4)

1.Odesskiy rafinadnyy zavod.
(Odessa--Sugar manufacture--Equipment and supplies)

BRAGINSKIY, V.Ya; NERUBAL'SHCHUK, B.G.

Parallel processing of product massecuites at a sugar refinery.
Sakh.prom. 34 no.9:31-32 S '60.                    (MIRA 13:9)

1. Odesskiy rafinadnyy zavod.
                (Odessa—Sugar manufacture)

BRAGINSKIY, Ya.

Contract and basic terms of delivery. Sov.torg. no.5:15-18 My '56.
(Delivery of goods (Law))
(MLRA 9:8)

BRAGINSKIY, Ya.I., inzh.

Metallurgical plant with magnetic transportation of liquid metals.
Met. i gornorud. prom. no.3:3-7 My-Je '63. (MIRA 17:1)

1. Gosudarstvennyy institut po proyektirovaniyu predpriyatiy po pro-
izvodstvu stali.

BRAGINSKIY, Ya.M.

Work experience of public assistance commissions under housing offices. Gor.khoz.Mosk. 30 no.5:26-27 My '56.
(MLRA 9:8)

1. Predsedatel' obshchestvennoy komissii sodeystviya.
(Moscow--Municipal services)

USSR/Medicine - Preventive, Railroad Transport

Card 1/1     Pub. 102-9/15                                        FD-1874

Author      : Braginskiy, Ya. S.

Title       : Experience in recording illness causing temporary incapacitation

Periodical  : Sov. zdrav., 2, 39-43, Mar-Apr, 1955

Abstract    : Making out daily reports of incapacitation has been inaugurated only re-
              cently by some branches of sanitation service of railroad transport. The
              author of this article recommends that all railroad plants yards, and de-
              pots supplement their monthly medical reports with daily medical reports.
              The chief of medical and sanitation service of railroad transport and all
              medical specialists can take action in eliminating factors causing illness
              or injury soon after the daily report is received. Monthly reports alone
              have proved to be ineffective because one month of delay is encountered
              in case of an epidemic of some sort occurs and immediate action is required.
              Monthly summary medical reports may also unduly delay discovery of any de-
              fects in the work of local medical agencies of railroad transport. Two
              tables.

Institution: Main Sanitary Administration, Ministry of Railways USSR

Submitted   : January 17, 1955

SARKISOV, A.G., BRAGINSKIY, Ya.S.

Incidence of disease with temporary disability among medical personnel.
Sov.zdrav. 17 no.7:29-35 Jl '58
(MIRA 11:8)

1. Iz ob"yedinennoy polikliniki Ministerstva putey soobshcheniya
(nachal'nik A.G. Sarkisov).
(MEDICAL PERSONNEL--DISEASES AND HYGIENE)

SARKISOV, A.G.; BRAGINSKIY, Ya.S. (Moskva)

Dispensary care of patients with chronic diseases. Sov. zdrav. 20
no.8:47-53 '61.
(MIRA 15:1)

1. Iz Ob"yedinennoy polikliniki (nachal'nik - zasluzhennyy vrach
RSFSR A.G.Sarkisov) Ministerstva putey soobshcheniya.
(MOSCOW—HOSPITALS—OUTPATIENT SERVICES)

BRAGINSKIY, Ye.O., inzhener.

Modernizing automatic machines used in cutting drill grooves.
Mshinostroitel' no.8:14-15 Ag '57.                    (MLRA 10:8)
                    (Milling machines--Attachments)

AUTHORS:        Braginskiy, Ye.O., Engineer, Fedin, A.Ye.       SOV/117-58-11-6/36

TITLE:          The Modernization of the Semi-Automatic Milling Machine Model
                6V-1 (Modernizatsiya frezernogo poluavtomata modeli 6V-1)

PERIODICAL:     Mashinostroitel', 1958, Nr 11, p 8   (USSR)

ABSTRACT:       The semi-automatic milling machine model 6B-1 is used for
                milling screw grooves.  In the regulation of the spindle,
                there were several drawbacks.  The modernized spindle has
                been mounted on rolling bearings.  The longitudinal stresses
                are absorbed by support bearings.  In the front support of
                the spindle, a two-range roller bearing AZ182116 has been
                inserted which ensures the rigidity of the spindle and the
                exactness of the revolutions.  The clearances between bear-
                ings have been abolished.  There is 1 diagram.

                1. Milling machines--Performance   2. Milling machines--Design

Card 1/1

VINOGRADOV, N.I., inzh.; BRAGINSKIY, Z.M. inzh.; MUKHIN, Yu.I.;
    TIMOFEYEV, M.,

    Readers' letters. Bezop.truda v prom. 6 no.2:37 F '62.
                                        (MIRA 15:2)
    1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy
    institut neftyanogo mashinostroyeniya (for Vinogradov).
    2. Nachal'nik protivopozharnoy sluzhby shakhty "40 let
    Oktyabrya" Permskoy oblasti (for Mukhin). 3. Inzh.-kontroler
    kotlonadzora Urpavleniya Saratovskogo okruga (for Timofeyev).
                .  (Industrial safety)

KADOMCEV, B.B. [Kadomtsev, B.B.]; BRAGINSZKIJ, S.I. [Braginskiy, S.I.];
KOCZOGH, Akosne [translator]

Plasma stabilization with nonpermanent, magnetic field.  Atom taj 2
no.2:103-119 Ap '59.

BRAGINTSEV, V.F.; ILYUKHIN, V.V.; PEDANOV, I.Ye.

Study of the Kapova cave. Nov.kar.i spel. no.3:76-79 '63.

(MIRA 16:10)

BRAGIR-ZADE, M. M.

27309 NURIYEV, M. M., BAGIR-ZADE, M. M. - O Novom Sposobe Remonta Tsilindrov Traktornykh
Dvigateley. Izvestiya Azerbaydzh. S-Kh. In-Ta Im. Beriya, 1949, No 1, S. 29-32.-
Na Azerbaydzh. Yaz. Rezyume Na Rus. Yaz.

SO: Letopis' Zhurnal'nykh Statey, Vol. 36, 1949

SOV/24-58-4-31/39

AUTHORS: Brago, Ye. N. and Stekol'nikov, I. S. (Moscow)

TITLE: On the Structure of a Long Spark in the case of Surge Voltages (O strukture dlinnoy iskry pri impul'snom napryazhenii)

ABSTRACT: By means of an instrument, the design of which is based on an electron-optic transducer and a 2-beam oscillograph with a very fast time scanning, the possibility was provided for studying the details of the optical and the electric phenomena of the development of a surge discharge in long gaps. A system was devised of synchronizing the instant of switching on the instrument relative to the instant of development of the discharge, which enabled recording at high scanning speeds the various stages of the discharge, i.e. the corona, leader, canal, spark-arc and the arc stages of the discharge. Figs 1 and 2 show photographs of time scanned pictures of discharges in gaps rod (+)-rod on a plane (-) for a 130 cm long gap; the same graph also shows an oscillogram of the

Card1/4

SOV/24-58-4-31/39

On the Structure of a Long Spark in the case of Surge Voltages

discharge current. The time scanning of the image of the discharge began at the instant $t_0$ when the length of the leader reached 113 cm (in view of the inadequate sensitivity of the apparatus the surge corona and the corona of the leader do not appear on the photograph; later the authors did manage to make a photo of the corona) From the instant $t_0$ the lengthening leader canal was scanned until its head came into contact with the plane. There a vertical band of illumination is visible which indicates a stepwise development of the leader canal. It is necessary to point out that on a number of other photographs the vertical components of the illumination were encountered only in the part of the leader which emitted light. From the time when the head of the canal of the leader comes into contact with the plane $P_1$ (Fig 1a) up to the instant $t_b$ seven more or less clearly pronounced bright bands appear which are separated by dark intervals extending throughout the entire gap. The time interval $t_a - t_b = 15.3 \times 10^{-8}$. After the instant $t_b$ there is a

Card 2/4

SOV/24-58-4-31/39

On the Structure of a Long Spark in the case of Surge Voltages

long pause which is followed by a bright final light
component at the instant $t_c$ (see Fig 1a). The
oscillogram of the current obtained for such a
discharge indicates that the leader current O-a corresponds
to the time interval $t_a$-$t_b$. Thus, contrary to the pre-
vailing conception on a main canal of a long spark being
a continuous process, it was found that this stage has a
very complicated optical structure. As can be seen from
Fig 1B, the oscillogram of the current does not contain
changes in the current intensity which correspond to the
light components. This can be explained either by the
specific conditions of measuring the current between the 2
planes $P_1$ and $P_2$, Fig 1a, which have a relatively large
mutual capacitance or by the absence of any relation
between the light components and the longitudinal current
flow in the spark canal. In Fig 2 the time scanning began
at the instant when the length of the leader from the
lower rod reached 33.3 cm and the length of the leader of
the upper electrode reached 46.5 cm. The fusion of the
leaders occurred at the instant $t_a$ and in the fusion spot
Card3/4     a bright emission of light occurred with a vertical-layer
structure. The layers extend upwards and downwards to the

SOV/24-58-4-31/39

On the Structure of a Long Spark in the case of Surge Voltages

electrodes. After a short pause there was a very intensive component of light $t_b$ with a sharp edge at the right side. Here the illumination weakened considerably but after $7.3 \times 10^{-2}$ µsec a new bright illumination component occurs. Then, the illumination has a diffusion character up to the very end of the discharge. Analysis of the oscillogram of the current flow showed that even here the canal stage, which sets in after the instant $t_a$, has a complicated structure. In view of the fact that the current was measured in the lower rod, a better coordination was obtained between the picture of the changes in the current and the picture of the components of light. There are 2 figures.
(Note: This is a complete translation)

SUBMITTED: October 9, 1957
Card 4/4

SOV/24-58-11-13/42

AUTHORS:   Brago, Ye. N. and Stekol'nikov, I. S. (Moscow)

TITLE:     Investigation of the Nature of a Long Spark
           (Issledovaniye prirody dlinnoy iskry)
           Part VI. Pre-leader Phenomena of a Surge Discharge
           (Dolidernyye yavleniya impul'snogo razryada)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh
           Nauk, 1958, Nr 11, pp 50-58 (USSR)

ABSTRACT: In earlier work of the authors (Refs 1-8) problems were
           dealt with relating to the development of surge corona,
           certain assumptions were made and various hypotheses on
           the mechanism of the development of such corona were put
           forward.  In the here described work the authors filmed
           the optical picture and simultaneously recorded the
           current and voltage so as to obtain quantitative data on
           the mechanism of surge corona in long gaps.  Furthermore,
           they aimed at elucidating the effect on the development
           of impulse corona of such external factors as introducing
           a screen into the gap, configuration of the external
           electrostatic field, repetition frequency, etc., as well
           as the interaction of these factors with the subsequent
     Card1/5 stages of the discharge.  The corona studies were carried

Investigation of the Nature of a Long Spark     SOV/24-58-11-13/42

out in plane + sphere gaps of 100, 150, 200 and 265 cm
length; the diameters of the spheres with corona
discharges were 4.7, 15, 25 cm.  As a voltage source a
surge generator with a nominal voltage of 3.5 MV and a
discharge capacitance of 18 200 pF was used.  The voltage
and the current of the corona were recorded by means of a
circuit shown in Fig.1 in which the corona emitting
electrode plus the sphere were grounded and the other
electrode, a plane of 3 x 3 m², was placed on the top at
a height of 490 cm from the floor level of the high
voltage hall.  The results of the photographic corona
investigations in gaps up to 265 cm long are in agreement
with earlier obtained results for shorter gaps; the
corona consists of individual elements each of which can
be clearly sub-divided into two parts: rectilinear
discharges emitting a bright light and emanating directly
from the sphere, and long tree-like threads emitting a weak
light.  In Fig.3 the dependence is graphed of the length
of surge corona (determined from the photographs) on the
amplitude of the voltage impulse for a sphere diameter of
Card2/5  25 cm.  Photographs reproduced in Fig.4 show the influence

Investigation of the Nature of a Long Spark     SOV/24-58-11-13/42

of screens on the development of surge corona; it was
found that the breakdown of a barrier placed into the
discharge gap proceeds during the corona stage, which is
not in agreement with the results obtained by Norinder
and Salka (Ref 9). The data obtained for the ignition
potential of the corona differ from those obtained in
earlier work of the authors (Ref 5) which related to
measuring the corona threshold voltage in sphere-plane
gaps up to 150 cm long. This difference is attributed
to a differing distribution of the external electrical
field in the case of an "upside down" arrangement with
a sphere at ground potential. In Fig.5 the dependence
is graphed of the time  t ($\mu$sec) and the voltage  $U_m$ (kV)
of surge corona on the steepness  h  of the applied
voltage impulse (sphere of 4.7 cm dia). In Fig.6 the
dependence is graphed of the amplitude of the current of
the surge corona  i(a) on the ignition potential  U (kV)
for a sphere of the same diameter. Park and Cones (Ref 7)
pointed out that the striking of corona is appreciably
influenced by the preliminary syphoning of free electrons
Card3/5     from the discharge gap. The here described experiments

Investigation of the Nature of a Long Spark      SOV/24-58-11-13/42

have shown that these results are correct only for the
conditions pertaining in the experiments of the authors,
i.e. relatively short gaps and voltages approaching $U_0$.
Such results could not be reproduced under similar
conditions in gaps 100 to 265 cm long. In Fig.7
oscillograms and photographs are reproduced which indicate
the relation between the structure of the corona elements
and the shape of current surges. It is characteristic
that the current of two corona elements (Fig.7B) is twice
as intensive as that of a single element; the current
impulse of two corona elements is exactly equal to the
sum of two impulses from a single corona element. It was
found that the corona current does not change by placing
a screen into the discharge gap (Fig.4a) and also
that the ionisation density in the column of a corona
element exceeds $5.7 \times 10^{12}$ ions/cm$^3$. In the last part

Card 4/5

Investigation of the Nature of a Long Spark    SOV/24-58-11-13/42

of the paper the obtained results are evaluated in detail.
There are 8 figures and 11 references, 6 of which are
Soviet, 4 English, 1 German.

SUBMITTED: December 14, 1957

Card 5/5

BRAGO, Ye. N., Candidate Tech Sci (diss) -- "Investigation of the impulse corona over long discharge intervals". Moscow, 1959. 22 pp (Acad Sci USSR, Power Engineering Inst im G. M. Kryzhizhanovskiy) (KL, No 24, 1959, 135)

7(6), 9(6)                                                     SOV/30-59-3-9/61
AUTHOR:        Brago, Ye. N.

TITLE:         The Electronic-optical Method of Investigating Electric Gas
               Discharge (Elektronno-opticheskiy metod issledovaniya elektri-
               cheskogo razryada v gaze)

PERIODICAL:    Vestnik Akademii nauk SSSR, 1959, Nr 3, pp 52-54 (USSR)

ABSTRACT:      The development of first-rate electronic-optical pulse trans-
               formers in industries permitted the construction of instruments
               by which superfast space-time developments of the phenomena
               under investigation as well as a framing of the picture are
               obtained. At the Laboratoriya vysokovol'tnogo gazovogo razryada
               Energeticheskogo instituta im. G. M. Krzhizhanovskogo Akademii
               nauk SSSR (Laboratory for High-voltage Gas Discharge of the
               Institute of Power Engineering imeni G. M. Krzhizhanovskiy
               of the Academy of Sciences of the USSR) an electronic-optical
               chronograph-epograph (epograf) with an exposure of up to
               $10^{-8}$ sec was designed on the basis of electronic-optical trans-
               formers of the types PIM-3 and PIM-4. This portable instrument
Card 1/2       with the dimensions 260 × 500 × 600 mm is equipped with an ex-

The Electronic-optical Method of Investigating Electric Gas Discharge
SOV/30-59-3-9/61

changeable ocular and a quartz lens of a speed of 1:5. Pictures
are made by means of the camera "Kiyev". The block scheme of
the epograph is given in figure 1. The thyratrons TGI 1-3/1
and TG3 0.1/1.3 are used for control and the pentode GU-50
as a discharge tube. The condensers $P_z$ and $P_k$ as well as the
hydrogen thyratron TGI 1-50/5 are employed in addition. The
work of the epograph is illustrated in figure 2.
There are 2 figures.

Card 2/2

STEKOL'NIKOV, Il'ya Samuilovich; Prinimali,uchastiye: BRAGO, Ye.N.; PULAVSKAYA,
I.G. VUL, B.M., otv.red.; MINTS, B.V., red.izd-va; ASTAF'YEVA; G.A.,
tekhn.red.

[Nature of long sparks] Priroda dlinnoi iskry. Moskva, Izd-vo
Akad.nauk SSSR, 1960. 271 p.                         (MIRA 13:9)

1. Chlen-korrespondent AN SSSR (for Vul).
            (Electric spark)

*BRAGO, YE. N.*

*9.3150*

S/020/60/133/03/02/013
B019/B056 82273

AUTHORS:     Bazelyan, E. M., Brago, Ye. N., Stekol'nikov, I. S.

TITLE:       A Considerable Decrease of the Average Breakdown Gradients
             in Long Discharge Gaps With an Oblique-angled Voltage Wave

PERIODICAL:  Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 3,
             pp. 550 - 553

TEXT: The introduction refers to experiments carried out at the
laboratoriya vysokovol'tnogo gazovogo razryada (Laboratory of High-voltage
Gas Discharges) of the Institute mentioned under Association (Refs. 1 –
4). Recently, interesting results have been obtained with respect to the
decrease of the average discharge gradient. The scheme of the experimen-
tal arrangement shown in Fig. 1 is discussed. Recording of voltage was
carried out by means of an oscillograph and a capacitive voltage divider.
Fig. 2 shows the discharge characteristic of the experimental device for
various lengths of the discharge gaps between the rods used and the
earthed plate. The voltage minimum occurring for all distances between
100 and 375 cm within the range of 150 - 180 $\mu$sec of the time of

Card 1/3

A Considerable Decrease of the Average
Breakdown Gradients in Long Discharge Gaps
With an Oblique-angled Voltage Wave

S/020/60/133/03/02/013
B019/B056 82273

discharge is pointed out. This characteristic is explained by a discussion of the processes before the discharge in the discharge gap. The occurrence of discharge is dealt with, and it is shown that in the left part of the characteristic a certain inertia of the processes before the discharge occurs (in the case of short discharge times). This inertia decreases with an increase of the times of discharge, and the blocking action of the space charge formed in the development of the corona grows. This blocking action was investigated by the authors by means of alternating current (industrial frequency). The discharge characteristics of the same discharge gap are shown in Fig. 3. From a discussion of these results and the dependence of the average discharge gradient on the length of the discharge gap as shown in Fig. 4, the authors conclude that by the effect produced by the oblique-angled wave and the alternating current, the zone of the unipolar volume charge is limited, and that above all this volume charge does not depend on the length of the discharge gap. There are 4 figures and 7 references: 6 Soviet and 1 German.

Card 2/3

A Considerable Decrease of the Average          S/020/60/133/03/02/013
Breakdown Gradients in Long Discharge Gaps       B019/B056 82273
With an Oblique-angled Voltage Wave

ASSOCIATION: Energeticheskiy institut im. G. M. Krzhizhanovskogo Akademii
             nauk SSSR (Institute of Power Engineering imeni G. M.
             Krzhizhanovskiy of the Academy of Sciences of the USSR)

PRESENTED:  March 26, 1960, by L. A. Artsimovich, Academician

SUBMITTED:  March 25, 1960

Card 3/3